Sébastien Destercke
CNRS Researcher

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▬▬▬ Career

CNRS researcher

Oct. 2011 - Now	**Joint research unit Heudiasyc (7053)**, *Université de technologie de Compiègne, France*.
Interests	Information modelling and treatment under severe uncertainty.
Team	Decision et Image. Head: Yves Grandvalet, CNRS researcher

CIRAD research engineer

Feb. 2009 - Oct. 2011	**Joint research unit IATE**, *Montpellier SupAgro, France*.
Interests	Uncertainty modelling and aid-decision applied to agronomical production chains.
Team	Knowledge Engineering group. Head: Patrice Buche, research engineer

Teaching and research assistant

Sept. 2008 - Feb. 2009	**Mathematic and computer science department**, *Université Toulouse le mirail, France*.
Interests	Information modelling and treatment under severe uncertainty.
Team	Raisonnements Plausibles, Décision et Méthodes de preuve. Head: Didier Dubois, CNRS researcher

▬▬▬ Education

2005-2008	**PhD in Computer Science**, *Université Paul-Sabatier*, Toulouse.
	Thesis prepared at Toulouse Institute of Computer Science Research and funded by the French Institute for Radiological Protection and Nuclear Safety.

Dissertation

Title	Uncertainty representation and combination: new results with application to nuclear safety issues
Supervisor	Didier Dubois, CNRS researcher, IRIT
Co-supervisor	Eric Chojnacki, research engineer, IRSN
Reviewers	Thierry Denoeux, professor, Université technologique de Compiègne
	Serafin Moral, professor, Universidad de Granada
	Olivier Strauss, Lecturer, Université de science de Montpellier
Examiners	Gert de Cooman, professor, Ghent University
	Philippe Fortemps, professor, Faculté polytechnique de Mons
	Monique Pontier, professor, Université Toulouse Paul Sabatier

1998-2004	**Engineer Degree**, *Faculté polytechnique*, Mons (Belgium).
	Engineer degree in computer science and applied mathematics

Languages

French	**Mother tongue**
English	**Fluent**
Spanish	**Conversant**
Dutch	**Basic knowledge**

Awards and grants

2012	3 month visit grant at Universidad de Oviedo, Statistic department
2009	Best Ph.D. (gold prize) awarded by the International Society for Imprecise Probabilities: Theories and Applications
2008	Best paper award, $\lambda\mu$ conference, category "new industrial challenges"

Projects

EVEREST

Details	3 years (2013-2016), member, ANR grant
Topic	Learning High Level Representations of Large Sparse Tensors
Partners	Heudiasyc/CNRS (France) & Xerox Research Center Europe (France).

ECOBIOCAP

Details	4 years (2011-2015), member, FP7 European grant
Topic	Ecoefficient Biodegradable Composite Advanced Packagings
Partners	IVV (Germany), UCC (Ireland), SIK (Sweden), NBM (Spain), CSIC (Spain), INRA (France), FUERST-PLAST (France), FEDOU (France), ALTERBIO (France), UMINHO (Portugal), IBET (Portugal), UNIROMA (Italy), NOVAMONT (Italy), UNIBO (Italy), CBHU (Hungary)

Scientific activities

Reviewing

Journal	**Regular (min. 1 reviews/year):** IJAR, FSS, INS, IEEE SMC, IJUFKS, SOCO
	Occasional (less than 1 reviews/year): JSTP, AI, MSS, IJRS, ANOR, Hydrology and Earth System Sciences, CAD, JRR, AIJ, IEEE TFS, IEEE TKDE, Environmental Modelling & Software, CSDA, JSPI, TOMACS, MACHS.
Conferences	**Program committee:** UAI (2010,2011,2012), BELIEF (2012), ECSQARU (2011), IHMSC (2011), ISIPTA (2009,2011,2013), SMPS (2012), SOCPAR (2010)
	Reviewer: LFA (2009, 2012), SMPS (2008, 2010), EUSFLAT (2009), IPMU (2010, 2012)

Organization

Committee	LFA (2006, 2012), SMPS (2008), ISIPTA (2013)
Special Sessions	ERCIM (2011,2012), SMPS (2012)

Responsabilities

SIPTA Executive editor of the Society for Imprecise Probability: Theories and Applications (2011-2013)

BFAS Secretary for the Belief Functions and Applications Society (2011-2013)

Invited talks

SUM 2012 Invited tutorial: "Uncertainty handling and modelling: an introduction"

PhD supervision

2010-2013 Nicolas-Sutton Charani, co-supervisor: Thierry Denoeux

"Learning from uncertain data: application to rubber quality prediction"

Publications

Edited journals, proceedings, books

[1] S. Destercke, M. Masson, and B. Quost. Belief 2012 conference special issue. *Int. J. of Approximate Reasoning*, To appear.

Journal papers

[2] Sébastien Destercke. Independence and 2-Monotonicity: Nice to Have, Hard to Keep. *International Journal of Approximate Reasoning*, (to appear), 2013.

[3] Sébastien Destercke and Thomas Burger. Toward an Axiomatic Definition of Conflict Between Belief Functions. *IEEE trans. on systems, man, and cybernetics. Part B*, pages 1–12, 2012.

[4] Rallou Thomopoulos, Sébastien Destercke, Brigitte Charnomordic, Iyan Johnson, and Joël Abécassis. An iterative approach to build relevant ontology-aware data-driven models. *Information Sciences*, 2012.

[5] Matthias Troffaes, Enrique Miranda, and Sébastien Destercke. On the connection between probability boxes and possibility measures. *Information Sciences*, 2012.

[6] Sébastien Destercke, Patrice Buche, and Brigitte Charnomordic. Evaluating Data Reliability: An Evidential Answer with Application to a Web-Enabled Data Warehouse. *IEEE Transactions on Knowledge and Data Engineering*, pages 1–14, 2012.

[7] Sébastien Destercke and Olivier Strauss. Filtering with clouds. *Soft Computing*, 16(5):821–831, 2012.

[8] Sébastien Destercke. A K-nearest neighbours method based on imprecise probabilities. *Soft Computing*, 16(5):833–844, 2012.

[9] Valérie Guillard, C. Guillaume, and Sébastien Destercke. Parameter uncertainties and error propagation in modified atmosphere packaging modelling. *Postharvest Biology and Technology*, 67:154–166, 2012.

[10] Matthias Troffaes and Sébastien Destercke. Probability boxes on totally preordered spaces for multivariate modelling. *International Journal of Approximate Reasoning*, 52(6):767–791, 2011.

[11] Sébastien Destercke and Valerie Guillard. Interval analysis on non-linear monotonic systems as an efficient tool to optimise fresh food packaging. *Computers and Electronics in Agriculture*, 79(2):116–124, 2011.

[12] Sébastien Destercke and Didier Dubois. Idempotent conjunctive combination of belief functions: Extending the minimum rule of possibility theory. *Information Sciences*, 181(18):3925–3945, 2011.

[13] Sébastien Destercke. Handling bipolar knowledge with imprecise probabilities. *International Journal of Intelligent Systems*, 26(5):426–443, 2011.

[14] Sébastien Destercke, Patrice Buche, and Valérie Guillard. A flexible bipolar querying approach with imprecise data and guaranteed results. *Fuzzy Sets and Systems*, 169(1):51–64, 2011.

[15] E. Chojnacki, J. Baccou, and S. Destercke. Numerical sensitivity and efficiency in the treatment of epistemic and aleatory uncertainty. *Int. J. of General Systems*, 39(7):683–704, 2010.

[16] Lev Utkin and Sébastien Destercke. Computing expectations with continuous p-boxes: Univariate case. *International Journal of Approximate Reasoning*, 50(5):778–798, 2009.

[17] Sébastien Destercke, Didier Dubois, and Eric Chojnacki. A CONSONANT APPROXIMATION OF THE PRODUCT OF INDEPENDENT CONSONANT RANDOM SETS. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, 17(6):773, 2009.

[18] S. Destercke, D. Dubois, and E. Chojnacki. Unifying practical uncertainty representations: I generalized p-boxes. *Int. J. of Approximate Reasoning*, 49(3):649–663, 2008.

[19] S. Destercke, D. Dubois, and E. Chojnacki. Unifying practical uncertainty representations: II clouds. *Int. J. of Approximate Reasoning*, 49(3):664–677, 2008.

[20] S. Destercke, D. Dubois, and E. Chojnacki. Possibilistic information fusion using maximal coherent subsets. *IEEE Trans. on Fuzzy Systems*, 17(1):79–92, 2008.

[21] Sébastien Destercke and Eric Chojnacki. Methods for the evaluation and synthesis of multiple sources of information applied to nuclear computer codes. *Nuclear Engineering and Design*, 238(9):2484–2493, 2008.

[22] Sébastien Destercke, Serge Guillaume, and Brigitte Charnomordic. Building an interpretable fuzzy rule base from data using Orthogonal Least SquaresâĂŤApplication to a depollution problem. *Fuzzy Sets and Systems*, 158(18):2078–2094, 2007.

International conferences with peer reviewing

[23] Nicolas Sutton-charani, Sébastien Destercke, and T. Denoeux. Classification trees based on belief functions. In *BELIEF 2012*, pages 77–84, 2012.

[24] Thomas Burger and Sébastien Destercke. Random generation of mass functions : A short howto. In *BELIEF 2012*, pages 145–152, 2012.

[25] Sébastien Destercke and Thomas Burger. Revisiting the notion of conflicting belief functions. In Thierry Denoeux and Marie-Hélène Masson, editors, *BELIEF 2012*, volume 164, pages 153–160, 2012.

[26] Sébastien Destercke and Benjamin Quost. Correcting Binary Imprecise Classifiers: Local vs Global Approach. In Eyke Hüllermeier, Sebastian Link, Thomas Fober, and Bernhard Seeger, editors, *Scalable Uncertainty Management*, volume 7520 of *Lecture Notes in Computer Science*, pages 299–310, Berlin, Heidelberg, 2012. Springer Berlin Heidelberg.

[27] Yosra Mazigh, Boutheina Ben Yaghlane, and Sébastien Destercke. Evaluation of the naive evidential classifier (nec): A comparison between its two variants based on a real agronomic application. In *SUM*, pages 619–624, 2012.

[28] Sébastien Destercke and Violaine Antoine. Combining Imprecise Probability Masses with Maximal Coherent Subsets: Application to Ensemble Classification. In *Synergies of Soft Computing and Statistics for Intelligent Data Analysis*, volume 190 of *Advances in Intelligent Systems and Computing*, pages 1–8, Berlin, Heidelberg, 2012. Springer Berlin Heidelberg.

[29] Matthias C M Troffaes and Sebastien Destercke. A Nested Approach to Multivariate Modelling Using Lower Previsions. In *Proceedings of PSAM 11 & ESREL*, 2012.

[30] Iyan Johnson, Joel Abécassis, Brigitte Charnomordic, Sébastien Destercke, and Rallou Thomopoulos. Making ontology-based knowledge and decision trees interact: an approach to enrich knowledge and increase expert confidence in data-driven models. In *Knowledge Science, Engineering and Management*, pages 304–316. Springer, 2011.

[31] Sébastien Destercke. Independence and 2-monotonicity: nice to have, hard to keep. In *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*, pages 263–274. Springer, 2011.

[32] Olivier Strauss and Sébastien Destercke. F-boxes for filtering. In *European Society for Fuzzy Logic and Technology - EUSFLAT*, 2011.

[33] Matthias Troffaes, Enrique Miranda, and Sébastien Destercke. On the connection between probability boxes and possibility measures. In *Proceedings of the 7th conference of the European Society for Fuzzy Logic and Technology (EUSFLAT-2011)*. Atlantis Press, 2011.

[34] Matthias Troffaes and Sébastien Destercke. Probability boxes on totally preordered spaces for multivariate modelling. In *ISIPTA'11: Proceedings of the Seventh International Symposium on Imprecise Probability: Theories and Applications*, 2011.

[35] Sébastien Destercke, Patrice Buche, and Brigitte Charnomordic. Data reliability assessment in a data warehouse opened on the Web. In *Flexible Query Answering*, 2011.

[36] Sébastien Destercke and Benjamin Quost. Combining binary classifiers with imprecise probabilities. In *Integrated Uncertainty in Knowledge Modelling and Decision Making*, pages 219–230. Springer, 2011.

[37] Sébastien Destercke. A k-nearest neighbours method based on lower previsions. In *Computational Intelligence for Knowledge-Based Systems Design*, pages 129–138. Springer, 2010.

[38] Sébastien Destercke. A new contextual discounting rule for lower probabilities. In *Information Processing and Management of Uncertainty in Knowledge-Based Systems. Applications*, pages 198–207. Springer, 2010.

[39] Sébastien Destercke and Olivier Strauss. Using Cloudy Kernels for Imprecise Linear Filtering. In Eyke Hüllermeier, Rudolf Kruse, and Frank Hoffmann, editors, *Computational Intelligence for Knowledge-Based Systems Design*, volume 6178 of *Lecture Notes in Computer Science*, pages 198–207, Berlin, Heidelberg, 2010. Springer Berlin Heidelberg.

[40] Sébastien Destercke. Evaluating trust from past assessments with imprecise probabilities: comparing two approaches. In *Scalable Uncertainty Management*, pages 151–162. Springer, 2010.

[41] Fathia Saïs, Rallou Thomopoulos, and Sébastien Destercke. Ontology-driven possibilistic reference fusion. In *On the Move to Meaningful Internet Systems, OTM 2010*, pages 1079–1096. Springer, 2010.

[42] Sébastien Destercke. A Decision Rule for Imprecise Probabilities Based on Pair-Wise Comparison of Expectation Bounds. In *Combining Soft Computing and Statistical Methods in Data Analysis*, pages 189–197. Springer-Verlag Berlin, 2010.

[43] Sébastien Destercke. Handling Bipolar Knowledge with Credal Sets. In *Combining Soft Computing and Statistical Methods in Data Analysis*, pages 199–207. Springer, 2010.

[44] Sébastien Destercke. Fuzzy belief structures viewed as classical belief structures: A practical viewpoint. In *Fuzzy Systems (FUZZ), 2010 IEEE International Conference on*, pages 1–8. IEEE, 2010.

[45] Sébastien Destercke and Didier Dubois. Can the Minimum Rule of Possibility Theory Be Extended to Belief Functions? In *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*, pages 299–310. Springer, 2009.

[46] Sébastien Destercke and Didier Dubois. The role of generalised p-boxes in imprecise probability models. In *Proc. of the 6th Int. Symp. on Imprecise Probability: Theories and Applications*, number 1, pages 179–188, 2009.

[47] Sébastien Destercke, Didier Dubois, and Eric Chojnacki. Computing with generalized p-boxes: preliminary results. In *Proc. Information Processing and Management of Uncertainty*, 2008.

[48] Enrique Miranda, Matthias Troffaes, and Sébastien Destercke. Generalised p-boxes on totally ordered spaces. In *Soft Methods for Handling Variability and Imprecision*, pages 1–8, 2008.

[49] Sébastien Destercke and Gert de Cooman. Relating epistemic irrelevance to event trees. In *Soft Methods for Handling Variability and Imprecision*, pages 66–73. Springer, 2008.

[50] Enrique Miranda, Matthias Troffaes, and Sébastien Destercke. Generalised p-boxes on totally ordered spaces. In *Soft Methods for Handling Variability and Imprecision*, pages 235–242. Springer, 2008.

[51] Sébastien Destercke, Serge Guillaume, and Brigitte Charnomordic. Using the OLS algorithm to build interpretable rule bases: an application to a depollution problem. In *FUZZ-IEEE*, 2007.

[52] Lev Utkin and Sébastien Destercke. Computing expectations with p-boxes: two views of the same problem. In *5th International Symposium on Imprecise Probability: Theories and Applications*, 2007.

[53] Sébastien Destercke, Didier Dubois, and Eric Chojnacki. Relating practical representations of imprecise probabilities. In *Proceedings of the 5th International Symposium on Imprecise Probability: Theories and Applications*, 2007.

[54] Sébastien Destercke, Didier Dubois, and Eric Chojnacki. Cautious conjunctive merging of belief functions. In *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*, pages 332–343. Springer, 2007.

[55] Sébastien Destercke and Eric Chojnacki. Evaluation, analysis and synthesis of multiple source information: an application to nuclear computer codes. In *European Safety and Reliability Conference*, 2007.

[56] Sébastien Destercke and Eric Chojnacki. Handling dependencies between variables with imprecise probabilistic models. In *European Safety and Reliability Conference*, 2007.

[57] Sébastien Destercke, Didier Dubois, and Eric Chojnacki. Transforming probability intervals into other uncertainty models. In *European Society for Fuzzy Logic and Technology - EUSFLAT*, pages 367–373, 2007.

[58] Sébastien Destercke and Didier Dubois. A unified view of some representations of imprecise probabilities. In *Soft Methods for Integrated Uncertainty Modelling*, pages 249–257. Springer, 2006.